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ABSTRACT

A program for trained vocational education curriculum specialists (VECS), consisting of 16 modules, was written, revised, and field tested at 15 sites nationwide. The instructional materials were written to deliver the highest rated competencies based on a field survey of vocational educators and review by a national advisory panel of vocational education experts. VECS modules were designed to create or upgrade an individual's vocational education curriculum development and management skills. Additional materials developed were a guide for instructors and administrators and audio cassette tape for orienting potential users. For the field test a modified quasi-experimental, pretest/posttest, treatment group/control group design was used. Participants were undergraduates in vocational education teacher preparation, practicing vocational educators, and persons with occupational skills who wished to teach their specialty at 12 colleges/universities and two state departments of education. Field test evaluation forms were developed to measure cognitive and affective outcomes and to collect biographical information. Results of the national field test demonstrated that the modules increased knowledge of topics necessary to the successful performance of skills central to the VECS role. They also tended to increase peoples' confidence in their ability to perform these skills. (A technical report is available separately as CE 031 803). (YLB)

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AMERICAN INSTITUTES FOR RESEARCH
IN THE BEHAVIORAL SCIENCES
P.O. Box 1113, 1791 Arastradero Rd., Palo Alto, Ca. 94302 • 415/493-3550

Field Testing Vocational Education

Curriculum Specialist Materials

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Summary Abstract

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A program for training vocational education curriculum specialists (VECS), consisting of 16 modules, has been written, revised, and field tested at 15 sites across the country.[1] Curriculum specialists are trained to develop and manage curricula so that vocational programs meet the needs of individual students, respond to current vocational education legislation, and provide skilled workers for the labor market. The VECS training modules cover topics in the history and philosophy of vocational education, and in curriculum development, management, and evaluation. Each module includes goals and objectives, text, learning activities, lists of resources, and self-check items. The modules can be used in classes or individual study arrangements at the preservice or inservice level by students with varying amounts of experience in vocational education.

Module Development

The VECS modules were written to meet an acknowledged national need. Emerging social priorities and changing employment and training requirements produced by technological advances have resulted in a demand for the improvement of vocational training programs. Federal legislation since 1968 has mandated expanded vocational education curricula for a wide variety of students. At a federally funded Conference on Curriculum Development in Vocational and Technical Education held early in 1969, the training of specialists in curriculum theory, design, development, management, and evaluation to achieve curriculum reform was identified as an essential national priority.

The United States Office of Education (USOE) held internal planning conferences in 1972-73, resulting in a decision to fund the design of vocational education curriculum specialist training programs. In 1974, the Bureau of Occupational and Adult Education (BOAE) awarded contracts to the American Institutes for Research (AIR) and to Washington State University (WSU) to produce, test, and revise such materials. In 1978, BOAE again contracted with AIR, this time to conduct a national field test of the VECS materials. The overall goal of this project was to integrate the two sets of VECS materials produced by AIR and WSU, systematically field test them, and encourage their use in the field.

In the first two contracts, primary emphasis was placed on the development of the VECS modules. In designing the first sets of materials, careful analyses of the competencies required of a curriculum specialist were conducted based on a field survey of vocational educators and a review by a national advisory panel of vocational education experts. The instructional materials were written to deliver the highest rated competencies. Prototype units were critiqued by consultants, instructors, and students, and then tested. Based on these results, content organization and formatting were revised, and formal development and production initiated. The resulting materials were subsequently pilot tested at five universities by an independent third-party evaluator. On the basis of the pilot test results, the materials then underwent a second revision.

AIR assumed that the competency base for the first sets of VECS materials was sound. Thus, efforts in the national field test concentrated on integrating and updating the first AIR and WSU materials, and on assuring that the resulting materials were appropriate for use in a wide variety of settings with varied target populations. Efforts in the third revision cycle prior to the national field test improved strategies for presenting information, added learning activities and support materials, eliminated overlap and redundancy, and focused on current national priorities regarding sex equity and training for handicapped and older students. Suggestions for improving the modules were collected during the national field test from instructors, students, and consultants in vocational education professional development. Based on this input, the modules were extensively edited and reordered, and a user's guide ("Using the VECS Modules," 1981) was prepared to summarize implementation strategies.

Purpose of the Modules

When the VECS projects were first conceived, their purpose was to prepare training materials for a new kind of specialist, the vocational education curriculum specialist, whose exclusive duty would be to take charge of all vocational curriculum development and management functions within an educational agency or institution. The vocational education curriculum specialist would work with teachers and advisory committees, pulling together suggestions and resources, to develop new curriculum ideas and assist in their implementation.

As the VECS modules evolved over the past six years, it became clear that full-time specialists with responsibility only for vocational curriculum are employed at a limited number of instructional materials centers around the country. Further, it is evident that vocational educators at many levels in the educational hierarchy need curriculum skills.

When funding is available and State or local organizational structures permit, full-time vocational education curriculum specialists are employed. More typically, many different individuals share the curriculum specialist's responsibilities. They may be researchers or they may hold various job titles such as: dean of occupational education; local director of vocational education; department or division director for vocational education; supervisor of occupational instruction; program supervisor for a vocational education discipline; or principal or assistant principal of a vocational-technical school or area vocational center. Even vocational instructors need many of the skills of curriculum specialists in their classrooms.

Thus, when used in the context of vocational education curricula, the original definition of the term "specialist" has been broadened and expanded. In the VECS modules, the words "curriculum specialist" or "vocational education curriculum specialist" are used as an easy way to refer to any vocational educator with responsibility for major activities related to curriculum development and management at the local, district, or state level, whether or not he or she is a "specialist" in the traditional sense. All vocational educators should participate, to some degree, in making

curriculum development and management decisions and all should be concerned with learning or sharpening the skills necessary to do so (Kaplan, Hamilton, & Wheeler, 1980).

The current VECS modules are designed to serve a broad purpose, that of creating or upgrading vocational education curriculum development and management skills under a variety of circumstances for all who need or will need these skills.

Curriculum development and management skills are used in activities such as the following: (1) designing or modifying vocational education programs to provide for individual differences, meet the needs of special students, or meet labor market demands; (2) selecting goals, objectives, and instructional strategies for vocational education programs, and preparing instructional materials; (3) conducting evaluations of vocational curricula; (4) managing a vocational program; (5) facilitating curriculum change; and (6) promoting professional growth and staff development.

Training in curriculum development and management skills can be conducted by a number of institutions and agencies for different groups of students. Training can be provided by the whole spectrum of teacher training institutions through various traditional and nontraditional arrangements, or by local school districts or public agencies acting either independently or in cooperation with higher education institutions. Independent study options can also be arranged. Target groups for curriculum specialist training can range from full-time, experienced vocational teachers and administrators, through occupational specialists desiring to teach their technical skills, to college undergraduates preparing for their first teaching experience ("Training Vocational Educators," 1979).

Description of the Modules

Since the VECS modules are intended to serve a broad purpose, their design had to be highly flexible. They synthesize an extensive amount of information into a concise format that is organized to promote efficient learning under a variety of circumstances. The titles of the VECS modules are shown in Table I. For descriptive purposes, it is convenient to divide the modules into three major series, which are also shown in Table I.

The introductory module gives an overview of the major vocational education curriculum development functions. The goal of the first series of modules is to provide an historical background of the development of vocational education, and to present an overview of its scope, organization, and priorities. The second series covers topics directly related to the preparation of instructional materials. Its goals are to teach vocational needs assessment and task analysis, specification of objectives, selection of instructional strategies, assessment of student achievement, and the selection or development of curriculum materials. The final series is designed to teach administrative skills associated with curriculum development. These modules are concerned with evaluation, program management, curriculum innovation, and staff development.

TABLE I

VECS Module Titles

Introductory Module	1.	Vocational Educators and Curriculum Management
Foundations Series	2.	The Scope of Vocational Education
	3.	Organization of Vocational Education
	4.	Legislative Mandates for Vocational Education
	5.	Priorities in Vocational Education
	6.	Vocational Education for Students with Special Needs
Curriculum Development Series	7.	Vocational Needs Assessment and Curriculum Development
	8.	Conducting Task Analyses and Developing Instructional Objectives
	9.	Selecting Instructional Strategies and Assessing Student Achievement
	10.	Relating Learning Differences and Instructional Methods
	11.	Selecting and Preparing Instructional Materials
Administrative Series	12.	Evaluating Vocational Education Curricula
	13.	Conducting Follow-Up Studies and Communicating Evaluation Results
	14.	Managing Vocational Education Programs
	15.	Preparing for Curriculum Change
	16.	Staff Development

Modules average about 75 pages in length and each requires about 30 to 50 hours to complete if all readings and activities are done thoroughly. Modules follow a standard format, which includes a detailed list of behavioral goals and objectives, and provides text, learning activities, and self-assessment items related to each goal. The modules usually contain from three to five goals each. Learning activities include reading in published resources, group projects, and discussion questions. Interviews with vocational educators and actual practice in curriculum development skills are frequently called for. Self-assessment items provide students with feedback on their learning of important topics.

A user's guide has been written to accompany the modules. It describes the various use patterns that the modules can accommodate. The whole set of modules can be instituted as the foundation of a formal curriculum specialist training program, or selected groups of modules can serve as the focus of specific courses. In addition, components of modules, individual modules, or series of modules can be integrated into existing courses or programs. Because the modules are organized around specific goals and include alternative learning activities, their use is appropriate in traditional and nontraditional classrooms, inservice education programs, and independent study.

Field Test Design

When the field test was first conceptualized, AIR staff planned to use a pretest/posttest, treatment group/control group design to test the effectiveness of the modules. As planning progressed, however, the importance of conducting the field test under the types of conditions expected to represent actual module use became increasingly apparent. AIR staff chose to conduct the field test under natural conditions; this decision precluded exercising the type of control over schedule, selection of subjects, treatment, and testing that is necessary to carry out a scientifically rigorous research design.

Several factors operated against conducting the field test according to textbook procedures. For example, it was necessary to select sites based on the appropriateness of the setting and the student population, and on their willingness to cooperate in the field test. Random selection procedures could not be employed. A local coordinator at each site identified instructors and students to serve in the field test. For the most part, intact classes were selected. Again, random selection proved impractical. Although instructors received guidelines on how to use modules in their classes during an orientation session, instructors adapted the use of the modules to meet their own needs. Implementation of modules across sites could not be standardized; students did not receive the same treatment. Because of the "naturalistic" character of the field test, AIR staff could exercise little control over the schedule of module use, the method of module implementation, or the selection and testing of participating students.

In planning the field test, AIR staff sought to gather control group data from students who would be tested but who would not study any modules. Ideally, the control group would be tested at the same times the treatment group was pre- and posttested. However, because control group students would not study the modules, it was likely that their motivation for conscientiously completing tests that were only partially related to their course work would be low. Thus, we could not expect to obtain adequate pretest/posttest data from a control group. In order to increase the probability of obtaining some useable data, AIR staff decided to test control students only once. At some sites this testing occured when the treatment group was pretested; at other sites the control group testing occured when treatment students were posttested. We chose to pretest some controls and posttest others so that some of the benefits of a pretest/posttest, treatment group/control group design might be realized. Unfortunately, because of problems with the comparability of treatment and control groups, it was appropriate to conduct only a limited number of analyses using control group data. While the results of these analyses lend some support to the conclusions drawn about the effectiveness of the VECS modules, they will not be discussed here. The treatment group/control group analyses that were run represent an incomplete set, and this type of analysis is not of primary importance in drawing conclusions about module effectiveness. The data reported here are those that would result from a one group, pretest/posttest design.

The modules were tested in two phases at 15 sites. The design featured multiple replications with different types of students using various patterns of module implementation and methods of teaching. For purposes of the analysis, the modules were divided into four groups as shown in Table II. Module groups 1 and 2 were taught in the fall of 1979; all module groups were taught during the winter and spring of 1980, although groups 3 and 4 were emphasized. Typically, students studied three to five modules each. Treatment students were tested both before and after they studied the particular modules taught in their classes. The test results of only those students who studied all modules in a group and took both a pretest and a posttest were used in the analysis.

TABLE II

Module Groups

	Number of Modules	Topics
Group 1	5	history and philosophy of vocational education
Group 2	5*	vocational education curriculum development
Group 3	2	procedures for individualizing curricula for special students
Group 4	5	evaluation and administration of vocational education

*After the field test, modules in Group 3 were divided between Groups 1 and 2 resulting in the three series of modules described earlier. One module in Group 2 was deleted and its significant content was integrated into several of the other modules, resulting in the final total of 16 modules.

Field Test Sites and Participants

The sponsors of the 15 VECS field test sites included twelve colleges or universities and two state departments of education. Five of the educational institutions held classes on campus, six used off-campus locations such as area vocational schools, and one university sponsored two sites, one on campus and one at a military base. Field test instructors were most often faculty, but also included a director of a regional occupational program, a principal of an area vocational school, and a director of a state curriculum and instructional materials center.

Students who participated in the field test included: (1) undergraduates preparing to be vocational education teachers; (2) practicing vocational education teachers, administrators, counselors and curriculum developers; and (3) persons with occupational skills developed in business or the military who wished to teach their specialty. Students' goals included obtaining a state vocational teaching certificate, a college degree at the undergraduate or graduate level, and inservice professional development. Weekly classes, held during the day, at night, or on weekends, were the main instructional delivery method, although several students took the

TABLE III

Field Test Sites and Participants

Sponsor	Location: on or off campus	Purpose of Institution: Preservice (P) or Inservice (I)	Student Characteristics	Number of Students Who Contributed Data to the Analysis, by Module Group			
				Group 1	Group 2	Group 3	Group 4
1. University of Idaho	off	I	Vocational teachers	5	4	7	7
2. Washington State University	on	P	Future vocational teachers	--	--	--	--
3. California State University, Sacramento	off	P	Occupational specialists	--	8	11	--
4. Virginia Polytechnic Institute and State University	off	I	Secondary and postsecondary teachers	10	8	--	--
5. Southern Illinois University, Carbondale	on	P	Occupational specialists and future business education teachers	--	25	--	9
6. Oklahoma State Department of Vocational and Technical Education	N/A	I	Staff of curriculum and instructional materials center	7	6	18	18
7. Oklahoma State University	on	I	Vocational teachers	4	5	10	10
8. Southern Illinois University, Carbondale at Travis Air Force Base	off	P	Military occupational specialists	23	--	--	--
9. University of South Florida	off	I	Vocational teachers, supervisors, and administrators	--	--	--	--
10. New Jersey Department of Education	N/A	I	Vocational teachers, coordinators, and guidance counselors	--	--	--	--
11. SUNY College of Technology, Utica/Rome	on	P & I	Graduate students with vocational-technical backgrounds	2	--	--	--
12. University of North Carolina, Greensboro	on	I	Home economics teachers	5	13	--	--
13. North Carolina State University	on	I	Teachers and state department administrators	11	2	--	--
14. Texas A & M University	off	I	Vocational teachers, administrators, and counselors	16	10	7	8
15. East Texas State University	off	I	Vocational teachers and administrators	26	12	17	32
				109	93	70	84

modules through independent study arrangements. Class sizes ranged from over 30 to under 10. Classes varied with respect to: the amount of the teacher's participation in instruction with the VECS modules, the emphasis placed on module topics and activities, and the amount of supplementary marerial used. Table III summarizes information on the field test sites and participants who supplied the data reported here (Claudy, Blank, & Hamilton, in press-a; Claudy, Hamilton, Kelly, Cummings, & Cappello, in press-b). Data from all sites and all participants are not reported due to the decision to base the analysis on results from only those students who studied all modules in a group.

Measurement of Effects

Specially constructed instruments for use in the field test were developed to estimate the effectiveness of the VECS modules. Field test evaluation forms (FTEFs) measured the cognitive and affective outcomes of module study and collected biographical information on students. The FTEFs provided information on the overall effect of studying groups of modules rather than an assessment of specific objectives. Effects of module groups 1 and 2 were assessed by one set of FTEFs, while module groups 3 and 4 were tested by another set.

Content of the FTEFs

The FTEFs had six sections, each designed to collect a different kind of information. One section requested background information on education, current occupation, and previous work experience. Another section provided a checklist on which respondents indicated recent professional development experiences. Two sections requested respondents to rate themselves on twelve activities that are typical of the curriculum specialist's role. The first self-rating was of a person's competence in performing the activities; the second was of a person's desire to engage in the activities. Competence self-ratings ranged from 1 to 6, based on agreement with statements such as "I cannot perform this activity even with supervision or guidance" (1) to "I consider myself an expert in this activity and can teach it to others" (6). Attitude self-ratings ranged from 1 ("I would like very much not to do this") to 4 ("I would like very much to do this").

The remaining two sections contained multiple-choice and short-answer items based on significant content of the modules. In order to reduce response burden and increase the number of people who might respond, the number of items included on any one FTEF was severely restricted. Only one, four-alternative, multiple-choice question was included for each goal of each module included in the group of modules tested by a form. The set of FTEFs testing module groups 1 and 2 contained 37 multiple-choice items; FTEFs for module groups 3 and 4 contained 23 multiple-choice items. Two sets of parallel multiple-choice items were written for each module group. Treatment students took one set of items as a pretest and the other set as a posttest. In order to control for possible differences in the difficulty of the two parallel sets, one set was used as a pretest at about half the sites, while the other set was included in the pretest at the remaining sites.

One short-answer item was written for each of the modules in groups 2-4. As these items were intended to assess cognitive prerequisites of the performance of skills central to the curriculum specialist's role, no short-answer items were included to test outcomes of the group 1 modules because these modules provide background information and do not focus on skills. The short-answer skill items required students to list such things as the appropriate procedures for certain situations, the sequential steps in a procedure, or the advantages and disadvantages of several alternative procedures. Responses were rated on a scale of 1-5 based on prespecified criteria that reflected the quality of the response in terms of its accuracy and completeness.

Development of FTEFs

The FTEFs were prepared according to a careful, step-by-step development process, and were approved by the Federal Education Data Acquisition Council (FEDAC), the governmental agency charged with ensuring that data are collected by the most efficient and effective means. The statements of a curriculum specialist's activities used in the self-assessments of competence and attitude were derived from the content of the modules, which was in turn derived from the detailed competency analysis performed prior to the writing of the initial set of modules. The multiple-choice and performance items were written based on objectives and topics the modules' authors considered most significant. Each item was reviewed by the module's author for content accuracy and by the project's evaluation director for technical adequacy. Items were then revised as many times as was necessary.

The multiple-choice items were pilot-tested. Respondents answered, critiqued, and edited the items. Point-biserial correlations and difficulty levels were calculated for each item; items with low correlations or very high or low difficulty levels were removed or improved. An attempt was made to balance difficulty levels of multiple-choice item sets when constructing the alternative forms of the FTEFs. However, we could not obtain clear evidence that parallel multiple-choice item sets were of equal difficulty. Therefore, cases were dropped randomly from the analysis so that equal numbers of students took each set of items.

Spearman-Brown estimates of the split-half reliabilities of the two parallel multiple-choice item sets were calculated for each of the four module groups. The resulting eight correlations ranged from .12 to .55 with approximately .40 the mode and .33 the mean. Two decisions made in designing the FTEFs operated against obtaining high split-half reliability estimates. First, the number of multiple-choice items included on any one form was deliberately kept low. The numbers of items for module groups 1-4 (see Table II) were 17, 20, 7 and 16 respectively. The Spearman-Brown reliability estimate for a sixty-item test with the same split-half correlation as the 17 items written for module group 1 would be effectively double the actual estimate obtained. The second decision operating against obtaining high split-half reliability estimates concerned using one set of items to test the content of a number of modules. The items testing a group of modules did not include interchangeable measures of the same learning, and since the Spearman-Brown statistic essentially is a measure

of internal consistency, a high split-half reliability estimate could not be expected.

Despite the low reliabilities calculated for the multiple-choice items, two points should be kept in mind. First, the content of the test items was judged valid by the module authors and the project director, those persons most familiar with the concepts the modules were designed to teach. Second, the FTEFs were the only instruments available to assess the effects of the modules. No standardized tests existed that measured the goals of these modules in a systematic manner.

Effects of Module Study

The results of the field test show that study of the VECS modules produces significant gains in knowledge of the history and philosophy of vocational education and topics in vocational education curriculum development, management, and evaluation. Use of the modules also increases students' self-perception of personal competence in activities performed by a curriculum specialist. The main effects of the VECS modules are cognitive and are seen in the results obtained on the multiple-choice and short-answer items. The cognitive effects are reinforced by an affective outcome revealed in the self-ratings of competence.

The assertion of the effectiveness of the VECS modules is based on the comparison of the pretest and posttest results of students who studied the modules. Treatment group pretest/posttest comparisons are appropriate for showing that newly developed instructional materials do, in fact, produce the kind of results for which they were designed. For the VECS field test, control group data were not intended to demonstrate that the modules are more effective than a competing treatment, but rather to indicate that factors other than module study occurring during the course of the field test were unlikely to have produced the obtained results. Fortunately, factors in the design of the field test that are discussed later indicate it is likely that the field test results were indeed produced by module study.

Data Analysis

In preparation for the analysis, several summary scores were created. Module group scores on multiple-choice items were calculated for treatment students who studied all modules in a group. Similar scores were created for short-answer items. Summary scores were created for the self-ratings of competence and attitude by adding together the ratings made on each of the 12 activity statements. The total number of professional development experiences reported was also summarized in a score.

An analysis for each module group was conducted. Treatment group students' pretest results were compared with their posttest results using t-tests for paired samples. Treatment pre versus treatment post comparisons were analyzed for multiple-choice and short-answer item module group scores, and competence and attitude self-rating summary scores.

Results

Data from the treatment groups' pretest and posttest comparisons are shown in Table IV. Multiple-choice item comparisons for all but one of the module groups show gains significant at the .05 level or better. The

TABLE IV

Results of Treatment Group Pretest vs. Treatment Group Posttest Paired Comparisons

		Number of Subjects	Highest Possible Score	Mean	Standard Deviation
a. Results on Multiple-Choice Items					
Module Group 1	Pretest	96	17	7.08	2.30
t = 4.28[d]	Posttest	96	17	8.29	2.44
Module Group 2	Pretest	78	20	7.74	2.67
t = 3.75[c]	Posttest	78	20	9.09	2.65
Module Group 3	Pretest	69	7	3.10	1.30
t = 1.92	Posttest	69	7	3.65	1.84
Module Group 4	Pretest	68	16	7.78	2.33
t = 2.23[a]	Posttest	68	16	8.63	3.19
b. Results on Short-Answer Items					
Module Group 2	Pretest	77	25	5.12	3.50
t = 6.90[d]	Posttest	77	25	8.64	4.68
Module Group 3	Pretest	69	10	2.97	2.15
t = 4.97[d]	Posttest	69	10	5.33	3.37
Module Group 4	Pretest	68	25	3.88	2.99
t = 6.19[d]	Posttest	68	25	8.74	5.68
c. Results on Self-Ratings of Competence					
Module Group 1	Pretest	89	72	42.13	11.72
t = 6.14[d]	Posttest	89	72	47.93	9.83
Module Group 2	Pretest	69	72	39.62	11.06
t = 8.31[d]	Posttest	69	72	49.46	8.34
Module Group 3	Pretest	65	72	43.35	10.84
t = 2.20[a]	Posttest	65	72	46.52	10.16
Module Group 4	Pretest	60	72	42.07	11.44
t = 2.90[b]	Posttest	60	72	45.60	11.56
d. Results on Self-Ratings of Attitude					
Module Group 1	Pretest	80	48	36.93	4.26
t = -0.41	Posttest	80	48	36.69	4.84
Module Group 2	Pretest	57	48	38.14	5.94
t = -0.81	Posttest	57	48	37.39	6.23
Module Group 3	Pretest	49	48	34.53	6.03
t = 2.01[a]	Posttest	49	48	36.06	4.64
Module Group 4	Pretest	54	48	33.28	6.28
t = 0.62	Posttest	54	48	33.69	7.46

[a]Significant at the .05 level
[b]Significant at the .01 level
[c]Significant at the .001 level
[d]Significant at the .0001 level

remaining comparison approached significance (p=.058). Since this group is composed of only two modules, the small number of items (7) probably accounted for the lack of a significant gain. Comparisons of results on short-answer items for all module groups were significant at better than the .0001 level. Comparisons of competence self-ratings for all module groups showed significant gains, but those for attitude were inconclusive.

Discussion of Field Test Results

Table V presents information on treatment group students who provided data for the pretest/posttest comparisons upon which the assertion of the effectiveness of the VECS modules is based. These individuals represent the broad range of educational attainment and experience in vocational education that would be possessed by the population of vocational educators and potential vocational educators for whom the modules are intended to provide training. Because the modules were tested on such a heterogeneous group of individuals, the results of the field test should be generalizable to the entire target population. The assertion of the statistical reliability of the field test results is based on the fact that the field test was conducted under natural conditions representing the wide variety of conditions for which the modules were designed. Each of the classes in which the modules were used can be considered a replication of the field test. Data from each of the replications were combined rather than analyzed separately due to the small number of subjects withboth pretest and posttest data at each site. Nevertheless, because the modules were tested at different times and different places, it is likely that the results reported are not limited to the field test.

The strongest evidence that the field test results were due to module study comes from factors in the design of the field test. Since the field test was conducted at different times at a number of sites, the effects of events other than module study would tend to average out. Practice effects on multiple-choice items are unlikely since different items comprised the pretest and posttest instruments. Practice effects on short-answer items and maturation effects are unlikely to have caused field test results because the tests are so closely tied to the content of the modules that gains resulting from other sources are improbable.

Conclusions

The results of the national field test demonstrated that the VECS modules increase knowledge of topics necessary to the successful performance of skills central to the curriculum specialist role. They also tended to increase peoples' confidence in their ability to perform these skills. As vocational education expands and changes, more curriculum specialists will be needed to create and maintain high quality curricula. Curriculum specialists will receive training under many different circumstances. The VECS modules provide a low cost,[2] soundly developed resource that is adaptable to a variety of needs. The modules summarize and organize a great body of material permitting vocational education curriculum specialist training to be conducted systematically at many different types of locations.

TABLE V
Characteristics of Students in the Treatment Group

		Sex		Degree				Credential		Previous Experience in Vocational Ed			Current Position				
	No.	% M	% F	% Assoc.	% Bach.	% Mast.	% Dr.	% Teaching	% Administrative	% Teacher	% Administrator	% Curriculum Developer	% Teacher	% Administrator	% Curriculum Developer	% Undergrad. Student	% Grad. Student
Module Group 1	96	44	56	5	53	27	1	67	7	59	9	9	57	14	9	21	46
Module Group 2	78	47	53	23	47	26	1	74	5	53	5	12	55	9	15	26	44
Module Group 3	69	46	54	13	45	33	1	78	13	47	14	23	62	14	19	6	41
Module Group 4	68	41	59	6	44	44	4	75	9	46	12	18	51	15	15	1	54

NOTE: Percentages do not always add to 100% due to rounding, missing data, or marking more than one category for Degree, Credential, Previous Experience, or Current Position.

Dissemination of Materials

To introduce vocational educators to the VECS materials, AIR staff conducted a series of technical assistance forums and dissemination workshops at locations across the country. At the six one-day forums, field test instructors and site coordinators gave detailed accounts of how to use the VECS modules in various settings. Approximately 250 vocational educators from 53 states and territories attended the workshops, including state-level vocational education administrators, state liaison representatives of the NNCCVTE, college and university faculty, and administrators from large school districts. The participants left the workshops with plans for using and disseminating the materials throughout their states.

An agreement with the East Central Network Curriculum Center, a member of the NNCCVTE, to print and distribute the VECS materials on a cost-recovery basis was approved by the Copyright Authorization Office, U.S. Department of Education.

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Footnotes

1. The information reported here was obtained pursuant to Contract No. 300-78-0562 with the Office of Education (now Department of Education), U.S. Department of Health, Education, and Welfare. Information, points of view, or opinions stated do not necessarily represent official Department of Education position or policy.

2. The 16 VECS modules and the user's guide are available for $35.00 from the:

   East Central Network Curriculum Center
   Sangamon State University, E-22
   Springfield, IL 62708

   Single or multiple copies of individual modules or series of modules are also available. The costs of reference materials listed in the 16 modules would total about $125.

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